

## PATENT CLAIMS

- 508A<sub>2</sub> > 1. An environmentally friendly insulating material for insulating buildings etc. which does not contain substances which are harmful or irritating to people and which does not release harmful substances/dust into the buildings' indoor air,
- 5 characterized in that the insulating material consists of fabric remnants which are shredded into a shoddy and then mixed with flax fibres and a fibrous polyester with a low melting point to form a homogeneous mass, which is then moulded into the desired shape and heat-treated until the polyester
- 10 fibres melt, bonding the fabric and flax fibres together.
2. An insulating material according to claim 1, characterized in that the fabric remnants are collected used clothes and/or fabric waste from the furniture industry.
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- 508A<sub>25</sub> > 3. An insulating material according to claims 1-2, characterized in that the polyester is any kind of polyester which exists in fibrous form, which has a melting point in the range 100-300°C, preferably in the range 100-200°C and most preferably in the range 120-170°C, and which has a dtex value in the range 2-10, more preferably from 2.5-6, and most preferably from 3-5.
- 20 4. An insulating material according to claim 3, characterized in that the polyester is preferably added in the range of 5-50 percent by weight, more preferably 10-30 percent by weight and most preferably 15-20 percent by weight, based on the material's total weight.
5. An insulating material according to claims 1-4,
- 25 characterized in that the flax fibres are preferably added in the range of 5-50 percent by weight, more preferably 15-40 percent by weight and most preferably 20-30 percent by weight, based on the material's total weight.
6. An insulating material according to claims 1-5,
- 30 characterized in that a fire-retardant agent is added to the insulating material in order to obtain approved fire resistance according to standard NT FIRE 035.

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7. An insulating material according to claim 6, characterized in that the fire-retardant agent is the commercially available product Station 1 and that it is added in a quantity of 2.5 kg per cubic metre of insulating material.

8. An insulating material according to claims 1-7, characterized in that the shoddy mass is mixed with from 0 to 40 percent by weight recycled cardboard and/or wastepaper which is shredded into fibres.

9. An insulating material according to claims 1-8, characterized in that the insulating material is formed into mats with a length of 1.20 m, a width within 0.58 - 1.00 m and thickness within 5 - 15 cm.

10. A method for production of insulating material according to claims 1-9,

characterized in that the process comprises the following stages:

- passing the collected clothes/fabric remnants to means for tearing them to bits and removing all non-fabric items such as buttons, zips, buckles etc.,
- passing the fabric remnants to a shoddy machine which further shreds the fabrics into individual fibres and mixes the mass into a homogeneous shoddy,
- passing the shredded fabric remnants to means for adding a suitable amount of flax fibres and fibrous polyester, and for air blasting the shoddy and the polyester mass, thus mixing them to form an aerated and homogeneous shoddy mixed with flax and polyester fibre,
- passing the shoddy to means for moulding the shoddy mass into a mat or another geometric shape with the desired measurement, and
- passing the mat to means for heat-treating the mat until the polyester fibres melt, bonding the fabric and flax fibres together.

11. A method for production of insulating material according to claim 10, characterized in that the following quantities are preferably mixed in, based on the total mass,

- preferably 5-50 percent by weight, more preferably 10-30 percent by weight and most preferably 15-20 percent by weight polyester,
- preferably 5-50 percent by weight, more preferably 15-40 percent by weight and most preferably 20-30 percent by weight flax fibres in the fabric remnants, and
- up to 2.5 kg of fire-retardant agent 1 per m<sup>3</sup> of shoddy mass, and that the

heat treatment involves heating the ready-moulded shoddy mass to the range of

- preferably 100-300°C, more preferably 100-200°C and most preferably 120-170°C.

- 5 12. A method for production of an insulating material according to claims 10-11, characterized in that cardboard and/or paper are added to the fabric remnants in a quantity from 0 to 40 percent by weight in the first stage of the method indicated in claim 10, i.e. the means for shredding the fabric remnants and
- 10 removing all non-fabric items such as buttons, zips, buckles etc.

ADD A<sub>5</sub>

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